

1

LOCKING DISPENSER**TECHNICAL FIELD**

Generally, the present invention relates to dispensers and associated refill containers. In particular, the present invention relates to dispensers that are configured to prevent the use of unauthorized refill containers. More particularly, the present invention is directed to a locking dispenser that is transitioned from a disabled, locked state to an enabled, unlocked state when a refill container with a valid key parameter is inserted therein.

BACKGROUND ART

Dispensers provide a convenient and sanitary source of various materials that are maintained within a replaceable refill container. For example, depending on the needs of the entity using the dispenser, the dispenser may be filled with a refill container maintaining soap, moisturizer, disinfectant, or other material. As such, dispensers utilizing replaceable refill containers provide a virtually continuous supply of dispensing material, while allowing a variety or range of materials to be interchangeably dispensed as needed.

However, the ability of a single dispenser to dispense a variety of products contained in various refill containers can lead to harm in the event that one product is inadvertently substituted for another. Furthermore, in circumstances where the health and safety of individuals is reliant on the correct material being dispensed, it is imperative that the correct refill container be consistently placed in the dispenser. For example, in the case of hospitals, surgeons and their support staff may require antimicrobial soap to cleanse their hands prior to performing surgery. In the event that the antimicrobial soap is inadvertently replaced with non-antimicrobial soap, the patient being treated thereby may be exposed to bacteria that could lead to a harmful or lethal infection. Aside from inadvertent refill substitutions, it is also a concern that individuals may undertake targeted efforts to knowingly substitute one refill container having one type of material for another refill container having another type of material to exact injury or death to another individual. It is yet a further concern that the product provided for use in the dispenser is manufactured or supplied by a certain predetermined entity to ensure quality and product compatibility with the dispenser, in addition to other concerns.

To resolve these concerns, efforts have been directed to providing a dispenser designed with locking or securing mechanisms that affect the positioning or fit of a refill container within the housing of the dispenser, thereby restricting placement of the refill containers within the dispenser to only those containers that contain the proper "key" to overcome the lock. For example, it is known in the art to use a mechanical key within the dispenser, such that the mechanical structure of the dispenser allows placement of only replacement containers that have a corresponding or complementary mechanical structure that fit within the mechanical structure of the dispenser. Unfortunately, mechanical keys and other locking devices used by dispensers to restrict the placement of unauthorized refill containers therein are generally exposed when the dispenser is opened and are relatively simple to defeat or circumvent by minimally-trained individuals.

Additionally, such locking devices utilize mechanical components formed of metal that are susceptible to corrosion when the dispenser is exposed to moisture present in its operating environment. Thus, because such dispensers are

2

generally placed in and about regions of moisture, such as about showers, sinks, and the like, it is generally only a matter of time before such locking devices become unreliable or fail completely. Although electronic keys may overcome some of the disadvantages of locking devices that use metal components, they tend to be substantially more expensive and are similarly susceptible to damage in moist environments.

Moreover, it is common practice for distributors of refill containers to furnish the dispenser to an institution, such as a hospital, for free or reduced cost in exchange for the exclusive right to provide replacement refill containers for the dispenser throughout its operating life or some portion thereof. Such agreements are provided to ensure that unauthorized replacement refill containers, which may be of inferior quality, are not surreptitiously used in the dispenser and also to protect the distributor's sales of authorized replacement refill containers from being overtaken by competitors. Unfortunately, however, such exclusive agreements are difficult to enforce without an effective mechanism in which to prevent the unauthorized substitution of replacement refill containers.

Therefore, there is a need for a dispenser with a locking device that is made operational when a compatible refill container is inserted therein. Additionally, there is a need for a dispenser that provides a locking system that is inexpensive to deploy. Furthermore, there is a need for a dispenser with a locking device that is resistant to corrosion when the dispenser is installed in regions where moisture is present.

SUMMARY OF INVENTION

In light of the foregoing, it is a first aspect of the present invention to provide a locking dispenser comprising a refill container carrying material therein to be dispensed by a pump coupled thereto, said refill container having a collar maintaining at least one marker configured in accordance with a predetermined key parameter; a support bracket adapted to carry said refill container; a lock assembly attached to said support bracket configured to be interfaced with said collar, said lock assembly maintaining at least one movable plunger configured in accordance with a predetermined lock parameter; and an engagement bar operatively coupled to said support bracket that when actuated engages said pump to dispense said material from said refill container, said engagement bar maintaining a lock arm in operative communication with said at least one plunger, said plunger initially locking said lock arm to prevent the actuation of said engagement bar; wherein said plunger unlocks said lock arm to enable the actuation of said engagement bar if said key parameter of said at least one marker is authorized by said lock parameter of said plunger when said marker and said plunger are interfaced, so as to enable the dispensing of said material from said refill container when said engagement bar is actuated.

It is another aspect of the present invention to provide a method for operating a locking dispenser comprising providing a dispenser maintaining at least one movable plunger configured in accordance with a lock parameter, said plunger operatively engaging said dispenser to place said dispenser in a normally locked state; providing a refill container carrying material to be dispensed having at least one marker configured in accordance with a key parameter; installing said refill container at said dispenser, such that said marker is interfaced with said plunger; and unlocking said dispenser if said key parameter of said marker is authorized by said lock characteristic of said plunger.